

## **USG – Red Wing NAAQS Designation Modeling Files**

### **CTDMPlus Model Input/Output, Pre-processing and Post-processing files**

- **CTDMPlus Terrain Preprocessor Files (Terrain directory)**
  - o **FITCON**
    - Input: Hill1.XY – *Contour master file*
    - Input: Hill1.FOP (copied to HOPTIONS when FITCON is run) – *FITCON Input Options File*
    - Output: Hill1.FO – *FITCON output file*
  - o **HCRIT**
    - Input: Hill1.FO - *FITCON output file*
    - Input: Hill1.HOP (copied to FOPTIONS when HCRIT is run) – *HCRIT Input Options Files*
    - Output: Hill1.HCO – *HCRIT output file representing the terrain for Hill1 and input file for CTDMPlus*
    - Output: Hill1.HPT and Hill1.PLT – *used to visualize contours in PLOTCON*
  - o **PLOTCON (used to visualize output files from HCRIT)**
    - Input: Hill1.HPT
    - Input: Hill1.PLT
    - No output files [1]
  - o **RECGEN**
    - USG – Red Wing did not use RECGEN to generate receptors for CTDMPlus. Receptors were generated using RECGEN and compared to those generated based on the previously approved receptor grid.

[1] GIS output files will be sent in a separate transmittal

- **CTDMPlus Files (Model\_IO directory)**
  - o Input: USG.CIN (Copied to CTDM.IN when CTDMPlus is run) – *CTDMPlus input options file*
  - o Input: Hourly\_2014.EMS (Includes boiler)(Copied to EMISSION when CTDMPlus is run) – *hourly emission rates*
  - o Input: 2014.SFC (Copied to SURFACE when CTDMPlus is run) – *Surface file generated by METPRO*
  - o Input: UMORE2014.PFL\* (Copied to PROFILE when CTDMPlus is run) – *Hourly meteorological data including wind, turbulence and temperature*
  - o Input: HILLS.HCO (combined terrain file including Hills 1-5) (Copied to TERRAIN when CTDMPlus is run) – *HCRIT output file representing the terrain*
  - o Input: USG.RCT (Copied to RECEPTOR when CTDMPlus is run) – *Receptor grid*
  - o Input: 2014\_R62\_MW.RAW\* (Copied to RAWIN when CTDMPlus is run) – *TD-6201 (Upper air data) generated using READ62*

- Output: USG.OUT (Copied from CTDM.OUT after CDTMPlus is run) – *Output summary of input options and model output concentrations*
- Output: USG.CON – *detailed concentration output files including all modeled concentrations at all receptors through the entire period of met data*

- **Post-processing Files (Model\_IO\H4H\_Back directory)**

- Input: 2014\_Back\_SO2.txt – *Variable hour-of-day/monthly SO2 background concentration*
- Input: CONC – *(Copy of USG.CON)*
- Executable: H4H\_Back.exe – *Post-processing tool used to calculate the 4<sup>th</sup> highest max daily 1-hour concentration averaged over the 3 year period (2014-2016)*
- Output: CONC\_OUT – *Summary of output included in USG.CON*

- **Background data (Background directory)**

- 2014-16 CTDM Hourly Bkg FHR 443.xlsx – Background data from FHR 443 SO2 monitor; spreadsheet calculates maximum monthly/hour-of-day background concentration; output is in µg/m<sup>3</sup>
- 2014-16 CTDM Hourly Bkg FHR 443.txt – File used to generate post-processing file above - 2014\_Back\_SO2.txt
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- **Meteorological Preprocessor Files (Execution mode 3)\***

- **METPRO**
  - Input: 2014.MOP (copied to OPTIONS when METPRO is run) – *METPRO options File*
  - Input: UMORE2014.PFL (copied to PROFILE when METPRO is run) – *Hourly meteorological data including wind, turbulence and temperature*
  - Input: 2014.SF1 (copied to SURF1 when METPRO is run) – *Surface based onsite measurements including onsite mixing height, net radiation and cloud cover*
  - Input: 2014.SF2 (copied to SURF2 when METPRO is run) – *Offsite cloud observations for use if onsite mixing height, net radiation and cloud cover data are not available*
  - Input: 2014\_R62\_MW.RAW (copied to RAWIN when METPRO is run) – *TD-6201 (Upper air data) generated using READ62*
  - Output: 2014.SFC – *Surface data generated by METPRO for use in CDTMPlus Model.*

**\*Not submitted**

## AERMOD Model Input/Output files and BPIP files

- **Input/Output Files**
  - o SO2 1hr DESIG USGRW 2014-16 UMP SFC-MPX UA BKG AERMOD v18081 20180501.inp – AERMOD input file
  - o SO2 1hr DESIG USGRW 2014-16 UMP SFC-MPX UA BKG AERMOD v18081 20180501.out – AERMOD output file
  - o SO2 1hr DESIG USGRW 2014-16 UMP SFC-MPX UA BKG AERMOD v18081 20180501 MAXDCONT.TXT – AERMOD MAXDCONT output file
  - o SO2 1hr DESIG USGRW 2014-16 UMP SFC-MPX UA BKG AERMOD v18081 20180501 MXDYBYYR.TXT – AERMOD max day by year output file
- **BPIP files (BPIP directory)**
  - o 20180305.bpi – BPIP-Prime input file
  - o 20180305\_Bpip.out – BPIP-Prime output file
  - o 20180305\_Bpip.sum – BPIP-Prime summary output file
- **Background data (Background directory)**
  - o 2014-16 FHR 443.xlsx – Background data from FHR 443 SO2 monitor; spreadsheet calculates maximum monthly/hour-of-day background concentration; output is in parts per billion for inclusion into AERMOD input file.